



## A) PRE-LISTENING ACTIVITIES

### 1. Vocabulary

You might know these words from your previous lessons. What do they mean?

element (n)	mixture(n)	noble gases (adj+n)
share similar properties (v+adj+n)	react with (v+prep)	contain (v)

### New vocabulary

- reluctance to react (n+v) – neochota reagovat
- outer shells of electrons (adj+n+n)– vnější slupky elektronů
- complete electron shells (adj+n+n)– úplné elektronové slupky
- gain, lose or share electrons (v+n) – získávat, ztrácet nebo sdílet elektrony
- increasing atomic size (adj+adj+n) – zvyšující se atomová hmotnost
- counteract the pressure (v+n)– vyrovnávat tlak
- unlike – na rozdíl od
- source of ... (n+prep.)- zdroj
- welding (n) – sváření

### 2. Work in pairs. Try to answer the following questions:

- What are noble gases?
- What is their main property? How can you explain it?
- Which elements belong to noble gases?
- Where are they used?
- Which noble gas is contained in a mixture that deep sea divers breathe?

## B) LISTENING

### 1. Now listen and answer the previous questions according to the recording.

2. Listen again and fill in the gaps with adverbs (*Adverb – e.g. nicely, slowly*).
3. Read the text aloud. Mind your pronunciation.
4. Read the text and search for adjectives. Form adverbs from these adjectives.

**Forming adverbs:** wide - widely  
 usual - usually  
 ready - readily  
 electronic - electronically  
 noble - nobly

**irregular:** good - well, fast - fast

*Example:*

Adjective	Adverb +ly
noble	nobly

5. Now choose 1-3 of these words and use them in a sentence.

*Example: Noble gases rarely share or lose electrons*

## NOBLE GASES

The noble gases are a group of six elements which share similar properties. The main property is that each atom exists by itself. Atoms of noble gases (1)..... react with any other atoms. 1

This means that noble gas atoms do not (2)..... form molecules, which makes them unique amongst elements. Other gases, such as oxygen or nitrogen for example,(3)..... exist in molecules which pair two atoms together and react (4)..... with other elements as well. This reluctance to react is why they're called noble gases. And it's also the source of their other name - the inert gases. 2

But why do the noble gases behave like this? It's because their outer shells of electrons are complete. Noble gas atoms don't want to gain, to lose or to share electrons unlike atoms of every other element. In order of increasing atomic size the noble gases are helium, neon, argon, krypton, xenon, and radon. 3

In everyday life we see them most (5).....in lighting, such as neon signs. But they're ..... used in industry, too. For example, in some types of welding, the metal is placed in an atmosphere of argon, so it won't react with anything in the air. Noble gases are used in many types of laser and deep sea divers breathe a mixture containing helium to counteract the pressure on the bottom of the sea. 4

Noble gases (7)..... react with any other elements. Noble gases have 5

complete electron shells, so they(8)..... exist as individual atoms. Noble gases are (9)..... used in industry.

### C) POST-LISTENING: PRESENTATIONS

**Work in small groups. Present one group from the periodic table to the class.**

**You may answer some of these questions:**

Where in the **periodic table** are the elements situated?

How many elements belong to this group? What are their names and **symbols**? What are their **atomic numbers** and **relative atomic mass**?

What **properties** do these elements share?

What **state of matter** are they in – are they **solid/liquid/gas**? What is their **melting/boiling point**?

Are they **metals/non-metals/semi-metals**?

Can you compare them to some other group in the periodic table?

What about the properties of individual elements? Are they

**light/heavy/abundant/hard/soft/soluble/combustible/malleable/ductile/conductive/toxic/reactive...?**

Where do they **occur**? How are they produced?

How do they react? What **compounds** do they form? What kind of **bonds** do they form?

What is their electron configuration? How many electrons are in their **outer shells**?

Where are they used?

**You may use some of these phrases to enrich your presentation:**

Hello. I would like to talk about ...

First of all... Then ... Finally.

That's all. Thank you for your attention.

### HOMEWORK<sup>3</sup>:

1. The smallest particle of an element to still be that element is the

atom  proton  molecule

2. This is a substance made up of only one kind of atom.

mixture  compound  element

3. The center of the atom that contains the proton and neutron is the

shell  nucleus  orbit

4. Changing the number of neutrons of an atom changes its:

isotope  ion  charge

5. Which two particles would be attracted to each other?

electrons and neutrons  electrons and protons  all particles are attracted to each other

6. The neutron has this sort of charge.

negative  alternates positive and then negative  no charge

7. Most of the mass of an atom is in the nucleus.

True  False

8. The total number of protons in the atom is its

atomic weight  atomic energy  atomic number

9. The sum of the protons and neutrons in an atom is its

atomic mass  mass number  atomic number

10. The part of the atom that orbits the nucleus is the

proton  neutron  electron

11. The chemical combination of two or more atoms in fixed amounts is called a

mixture  orbit  compound

12. The smallest part of a compound that still is that compound is a

mixture  molecule  nucleus

13. When atoms share electrons it is called a

chemical bond  radiation  current

14. Atoms with an electrical charge due to giving up or taking on more electrons are called

ions  solutions  isotopes

## VOCABULARY – WEEK 1 – NOBLE GASES

element (n)	prvek
compound	sloučenina
mixture(n)	směs
share similar properties (v+adj+n)	sdílet podobné vlastnosti
react with (v+prep)	reagovat s
inert/ reactive (adj)	inertní / reaktivní
noble gases (adj+n)	vzácné plyny
contain (v)	obsahovat
reluctance to react (n+v)	neochota reagovat
outer shells of electrons (adj+n+n)	vnější slupky elektronů
complete electron shells (adj+n+n)	úplné elektronové slupky
gain, lose or share electrons (v+n)	získávat, ztrácet nebo sdílet elektrony
increasing atomic size (adj+adj+n)	zvyšující se atomová hmotnost
counteract the pressure (v+n)	vyrovnávat tlak
unlike	na rozdíl od
source of ... (n+prep)	zdroj
welding (n)	sváření

periodic table of elements (adj+n+prep+n)	periodická tabulka prvků
symbol (n)	značka prvku
atomic number (adj+n)	protonové číslo
relative atomic mass (adj+adj+n)	relativní atomová hmotnost
solid / liquid / gas (adj)	pevný / kapalný / plynný
light / heavy (adj)	lehký / těžký
abundant (adj)	hojný
hard / soft (adj)	tvrdý / měkký
soluble (adj)	rozpustný
combustible (adj)	hořlavý
malleable and ductile (adj)	kujný a tažný
conductive (adj)	vodivý
melting / boiling point (adj+n)	bod tání / varu
metals / non-metals / semi-metals (n)	kovy / nekovy / polokovy
occur (v)	vyskytovat se
chemical bond (adj+n)	chemická vazba

### Sources:

<sup>1</sup>Adapted from <http://iteslj.org/questions/>

<sup>2</sup>Adapted from *Noble Gases* - Handout by Milada Pavlovová

<sup>3</sup>Adapted from <http://www.mcwdn.org/chemist/atom/atomquiz.html>